

VLAN Configuration Commands

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Chapter 1 VLAN Configuration Commands

1.1 VLAN Configuration Commands

The VLAN configuration commands include:

- `vlan`
- `name`
- `dot1q-tunnel`
- `switchport pvid`
- `switchport mode`
- `switchport trunk`
- `switchport dot1q-translating-tunnel`
- `show vlan`
- `show interface vlan`

1.1.1 `vlan`

Syntax

To add a VLAN, run `vlan vlan-id`. To delete a VLAN, run `[no] vlan vlan-id`.

`vlan` **`vlan-id`**

`[no]` `vlan` **`vlan-id`**

Parameters

| Parameters | Description |
|----------------|--|
| <i>vlan-id</i> | Defines the ID of the VLAN. Value range: 1-4094. |

Default Value

None

Command Mode

Global configuration mode

Usage Guidelines

After this command is run, the system enters the VLAN configuration mode and then you can modify some VLAN attributes.

Example

The following example shows how to add the VLAN whose ID is 2:

```
Switch_config#vlan 2
```

```
Switch_config_vlan2#exit
```

1.1.2 `name`

Syntax

To name a VLAN, run `name str`. To return to the default setting, use the `no` form of this command.

`name str`

[no] name str

Parameters

| Parameters | Description |
|------------|---|
| <i>str</i> | Defines the name of the VLAN. Value range: 1-32 characters. |

Default Value

The default VLAN name is 'Default'. Other VLAN's name is VLANxxxx (xxxx is 4-digit stack ID)

Command Mode

VLAN configuration mode

Usage Guidelines

This command can be used to modify the VLAN name to symbolize a specific VLAN.

Example

The following example shows how to set the name of VLAN200 to main405:

```
Switch_config# vlan 200
```

```
Switch_config_vlan_200# name main405
```

1.1.3 `switchport pvid`

Syntax

To configure VLAN of the access-mode port, run `switchport pvid vlan-id`. To return to the default setting, use the `no` form of this command.

switchport pvid `vlan-id`

`no switchport pvid`

Parameters

| Parameters | Description |
|----------------|---|
| <i>vlan-id</i> | VLAN ID which the port belongs to, ranging between 1 and 4049 Value range: 1-4094 |

Default Value

All ports belong to VLAN 1.

Command Mode

Port configuration mode

Usage Guidelines

The port can be access mode or relay mode.

Example

The following example shows how to set port g0/1 to the access port of VLAN10:

```
Switch_config#interface g0/1
```

```
Switch_config_g0/1#switchport pvid 10
```

1.1.4 switchport mode

Syntax

To configure the mode of the port, run the following command. To return to the default setting, use the no form of this command.

```
switchport mode {access | trunk | dot1q-tunnel-uplink tpid |
dot1q-translating-tunnel}
no switchport mode
```

Parameters

| Parameters | Description |
|-----------------------------------|---|
| <i>access</i> | Access mode |
| <i>trunk</i> | Relay mode |
| <i>dot1q-tunnel-uplink [tpid]</i> | VLAN tunnel uplink modeTpidd is the field value of VLAN tag |
| <i>dot1q-translating-tunnel</i> | VLAN translating tunnel mode |

Default Value

Access mode

Command Mode

Port configuration mode

Usage Guidelines

The OLT's port supports the following modes: the access mode, the relay mode, the VLAN tunnel mode, the VLAN translating tunnel mode and the VLAN tunnel uplink mode.

The access mode indicates that the port belongs to just one VLAN; only the untagged Ethernet frame can be transmitted and received.

The relay mode indicates that the port connects other OLTs and the tagged Ethernet frame can be transmitted and received.

The VLAN translating tunnel mode is a sub mode based on the relay mode. The port looks up the VLAN translation table according to the VLAN tag of received packets to obtain corresponding SPVLAN, and then the switching chip replaces the original tag with SPVLAN or adds the SPVLAN tag to the outside layer of the original tag. When the packets is forwarded out of the port, the SPVLAN will be replaced by the original tag or the SPVLAN tag will be removed mandatorily. Hence, the OLT omits different VLAN partitions that access the network, and then passes them without change to the other subnet that connects the other port of the same client, realizing transparent transmission.

The VLAN tunnel uplink mode is a sub mode based on the relay mode. The SPVLAN should be set when packets are forwarded out of the port. When the packets are received by the port, their TPIDs will be checked. If difference occurs or they are untagged packets, the SPVLAN tag which contains their own TPID will be added to them as their outer-layer tag. When the packets are received by the port, their TPIDs will be checked. If difference occurs or they are untagged packets, the SPVLAN tag which contains their own TPID will be added to them as their outer-layer tag.

The port mode collides with the 802.1X protocol. The 802.1X protocol cannot be configured in relay mode (including the VLAN translating tunnel mode and the VLAN tunnel uplink mode); the port on which the 802.1X protocol is configured cannot be set to the relay mode. That is to say, the 802.1X protocol can be effective only on the access-mode port (including the VLAN tunnel mode).

The 802.1X standard does not support authentication on the trunk port. The reason is that the authentication object regulated in the standard is not the port. As to port multiplexing, if user authentication is approved in one VLAN, all other VLAN users who multiplex this port are also authorized correspondingly, therefore, the trunk port does not support authentication.

GPON port does not support dot1q-tunnel-uplink.

Example

The following example shows how to set the port to the VLAN tunnel uplink mode and how to set the TPID of the unlinl port to 0x9100:

```
Switch_config_v1# interface g0/1
```

```
Switch_config_g0/1# switchport mode dot1q-tunnel-uplink 0x9100
```

1.1.5 switchport trunk

Syntax

To configure the attributes of the relay port, run the following command. To return to the default setting, use the no form of this command.

```
switchport trunk {vlan-allowed | vlan-untagged } {vlan-list | add vlan-list | except  
vlan-list | remove vlan-list | all | none}
```

```
[no] switchport trunk {vlan-allowed | vlan-untagged }
```

Parameters

| Parameters | Description |
|----------------------|---|
| <i>vlan-allowed</i> | VLAN ID which can be received and transmitted by the port Value range: 1-4094 |
| <i>vlan-untagged</i> | Frame that will be transmitted without adding the |

| | |
|--|------------------------------|
| | VLAN tag Value range: 1-4094 |
|--|------------------------------|

Default Value

The native VLAN ID of all relay ports is 1. The allowable value for all VLANs ranges between 1 and 4094.

Command Mode

Port configuration mode

Usage Guidelines

No matter the port is in access mode or in relay mode, you can run this command on the port. However, the port is in relay mode when this command functions.

The `vlan-allowed` parameter is used to control the VLAN range of the port; the `vlan-untagged` parameter is used to decide which packets need be added with the VLAN tag when a port transmits these packets.

When the `vlan list` is used, you can add, remove or set (none, all, except) the lists of the existing VLAN. The entered lists are separated by the comma or the hyphen. For example, "1, 3, 5, 7" stands for "vlan 1, vlan 3, vlan 5, vlan 7", while "1, 3-5, 7" stands for "vlan 1, vlan 3, vlan 4, vlan 5, vlan 7".

Example

The following example shows how to set the allowable VLAN range to 1-10, and the untagged VLAN range to 2-1000.

```
Switch_config_v1# interface g0/1
```

```
Switch_config_g0/1# switchport trunk vlan-allowed 1-10
```

```
Switch_config_g0/1# switchport trunk vlan-untagged 2-1000
```

1.1.6 `switchport dot1q-translating-tunnel`

Syntax

To configure the attributes of a port in VLAN translating tunnel mode, run `switchport dot1q-translating-tunnel {mode [flat | qinq] | translate {oldvlanlist | oldvlanid} newvlanid [priority]}`. To return to the default setting, use the `no` form of this command.

To configure the attributes of a port in VLAN translating tunnel mode, run the following command:

```
switchport dot1q-translating-tunnel mode { QinQ translate oldvlanlist newvlanid [priority] | flat translate { nto1 oldvlanlist | 1to1 oldvlanid } newvlanid [priority]}
```

```
switchport dot1q-translating-tunnel range mode {flat | QinQ} start oldvlanid-start end oldvlanid-end newvlanid [priority]
```

To return to the default setting, use the `no` form of this command.

```
no switchport dot1q-translating-tunnel mode { QinQ translate oldvlanlist | flat translate { nto1 oldvlanlist | 1to1 oldvlanid }
```

```
no switchport dot1q-translating-tunnel range mode {flat | QinQ} start oldvlanid-start end oldvlanid-end newvlanid [priority]
```

Parameters

| Parameters | Description |
|---------------------------|---|
| mask | Enable mask mode forward. Enable Mask VFP mode for GP3616. |
| <i>mode [flat qinq]</i> | VLAN translating mode of the VLAN translating tunnel port |
| <i>oldvlanlist</i> | The vlan range list before translation, which means 1 and 2 to 5. The value range of oldvlanlist is 1 to 4094. |
| <i>oldvlanid</i> | The vlan ID before translation. It is represented by an individual number. The value ranges from 1 to 4094. |
| <i>newvlanid</i> | The vlan ID after translation. The value ranges from 1 to 4094. |
| <i>priority</i> | Priority, the value of priority ranges from 0 to 7. |
| <i>oldvlanid-start</i> | The start serial number before translation. It is represented by an individual number. The value ranges from 1 to 4094. |
| <i>oldvlanid-end</i> | The end serial number before translation. It is represented by an individual number. The value ranges from 1 to 4094. |

Default Value

The VLAN translating mode of the VLAN translating tunnel port is QinQ and no VLAN translating items exists.

Command Mode

Port configuration mode

Usage Guidelines

Both the VLAN translating mode and the VLAN translating items validate in dot1q-translating-tunnel mode after they are configured. The translation modes fall into two kinds: the Flat mode and the QinQ mode. In Flat mode, the CLAN tag of packets which are received by the dot1q-translating-tunnel downlink port will be used as an index to look up the VLAN translating list. The CVLAN will be replaced by detected SPVLANs; when the packets are forwarded out of the port, the SPVLAN will then be replaced by CVLAN. In QinQ mode, the CLAN tag of packets which are received by the dot1q-translating-tunnel downlink port will be used as an index to look up the VLAN translating list and then the detected SPVLANs will form into SPVLAN tag to be added to the outside of CVLAN tag; when the packets are forwarded out of the port, the SPVLAN tag will then be removed.

When the VLAN translating items are configured on a port, the mapping between CVLAN and multiple SPVLANs can be configured in QinQ mode. To configure the mapping between CVLAN and multiple SPVLANs in flat mode, you have to configure QoS and then the correct transformation from SPVLAN to CVLAN can be conducted

when packets are transmitted out from this port.

Example

The following example shows how to add the translation items to g0/1, translate CVLAN 1000 into SPVLAN 100 and set the VLAN translation mode of the translation items to Flat.

```
Switch_config#interface g0/1
```

```
Switch_config_g0/1#switchport dot1q-translating-tunnel mode flat translate 1000 100
```

1.1.7 show vlan

Syntax

To display relative information about all VLANs, run the following command.

show vlan [id vlan-id | interface intf-id | subnet | mac-vlan | protocol-vlan | dot1q-translating-tunnel intf-id | flat-translation-table]

Parameters

| Parameters | Description |
|--|---|
| Id <i>vlan-id</i> | Displays the designated VLAN. Value range: 1-4094 |
| Interface <i>Intf-id</i> | Displays the designated port. |
| <u>flat-translation-table</u> | Displays the global information and statistics information about Dot1Q tunnel, or displays the detailed information about Dot1Q tunnel of the designated port. Displays the current N:1 flat transmission mode configuration information |
| subnet | Displays the configured IP-subnet VLAN entries. |
| mac- <u>vlan</u> addr | VLAN configuration information based on MAC 表项对应的 MAC地址 |
| <u>protocol</u> -vlan-id | VLAN configuration information based on the protocol ID, 取值范围为1-4094 |
| <u>dot1q-translating-tunnel</u> priority | Displays the port DDT configuration information 优先级 |

Default Value

None

Command Mode

Other modes except the user mode

Usage Guidelines

None

Example

The following example shows how to display relative information about all VLANs.

```
Switch_config# show vlan
```

| VLAN | Status | Name | Ports |
|------|--------|---------|---|
| 1 | Static | Default | g0/1, g0/2, g0/3, g0/4, g0/5 g0/6, g0/7, g0/8, tg0/1, tg0/2 tg0/3, tg0/4, gpon0/1, gpon0/2 gpon0/3, gpon0/4, gpon0/5 gpon0/6, gpon0/7, gpon0/8 gpon0/9, gpon0/10, gpon0/11 gpon0/12, gpon0/13, gpon0/14 gpon0/15, gpon0/16, p1 |

Status: The status parameter stands for the VLAN generation source; the static parameter means that VLAN is generated through configuration; the dynamic parameter means that VLAN is generated dynamically through the GVRP protocol.

The following example shows the detailed information about a VLAN:

```
Switch_config# show vlan id 1
```

```
VLAN id: 1, Name: Default
```

```
Mode: Static, Total Ports: 29
```

| Interface | Attributes |
|-----------|-----------------------|
| g0/1 | Trunk, unTagged, PVID |
| g0/2 | Access |
| g0/3 | Access |
| g0/4 | Access |
| g0/5 | Access |
| g0/6 | Access |
| g0/7 | Access |
| g0/8 | Access |
| tg0/1 | Access |
| tg0/2 | Access |
| tg0/3 | Access |
| tg0/4 | Access |
| gpon0/1 | Access |
| gpon0/2 | Access |
| gpon0/3 | Access |
| gpon0/4 | Access |

```

gpon0/5      Access
gpon0/6      Access
gpon0/7      Access
gpon0/8      Access
gpon0/9      Access
gpon0/10     Access
gpon0/11     Access
gpon0/12     Access
gpon0/13     Access
gpon0/14     Access
gpon0/15     Access
gpon0/16     Access
p1           Access

```

The following example shows the relevant information of a port's VLAN:

Switch_config# show vlan interface gpon0/1

| Interface | VLAN | | | |
|-----------|----------|------|----------|----------------|
| Name | Property | PVID | Vlan-Map | uTagg-Vlan-Map |
| ----- | | | | |
| GPON0/1 | Access | 1 | 1 | 1 |

1.1.8 show interface vlan

Syntax

To display relative information about the VLAN interface, run the following command.

show interface vlan intf-id

Parameters

| Parameters | Notes: | Value Range |
|------------|-------------------------------|-------------|
| Intf-id | Displays the designated port. | 1-4094 |

Default Value

None

Command Mode

Other modes except the user mode

Usage Guidelines

None

Example

The following example shows how to display the information about interface VLAN 1.

```
Switch#show interface vlan 1
```

```
VLAN1 is up, line protocol is up
```

```
  Ifindex is 2146
```

```
  Hardware is EtherSVI, Address is 00e0.0fbe.595c(00e0.0fbe.595c)
```

```
  Interface address is 10.112.4.160/24
```

```
  MTU 1500 bytes, BW 1000000 kbit, DLY 2000 usec
```

```
  Encapsulation ARPA
```

```
  ARP type: ARPA, ARP timeout 04:00:00
```

```
  5 minutes input rate 0 bits/sec, 0 packets/sec
```

```
  5 minutes output rate 0 bits/sec, 0 packets/sec
```

```
    Received 426 packets, 50537 bytes
```

```
    0 broadcasts, 0 multicasts
```

```
    0 discard, 0 error, 0 PAUSE
```

```
    0 align, 0 FCS, 0 symbol, 0 fragment
```

```
    0 jabber, 0 oversize, 0 undersize
```

```
    Transmitted 55560 packets, 22495 bytes
```

```
    55556 broadcasts, 0 multicasts
```

```
    0 discard, 0 error, 0 PAUSE
```

```
    0 collision, 0 indisc, 0 deferred
```

```
    0 single, 0 multiple, 0 excessive, 0 late
```

The statistics values are explained as follows:

Packets input means the input of all packets, including broadcast packets, multicast packets and unicast packets.

Bytes means the byte volume of all packets.

Broadcasts means received broadcast packets.

Broadcasts means received broadcast packets.

Input errors means received error packets.

Input discards means that the received packets are dropped, such as the received packets when the interface protocol is down.

Packets output means the output of all packets, including broadcast packets, multicast packets and unicast packets.

Bytes means the byte volume of all transmitted packets.

Broadcasts means transmitted broadcast packets.

Multicasts means transmitted multicast packets.

Output errors means transmitting error packets.

Output discards means that the transmitted packets are dropped, such as the transmitted packets when the interface protocol is down